

CLAIMS

1. A method for making a composite sports racquet frame comprising the steps of:

providing a mold having first and second mold plates which, when joined, define a mold cavity in the shape of a sports racquet;

placing a first tube of a material suitable for forming a racquet frame in said first mold plate;

placing a second tube of a material suitable for forming a racquet in said second mold plate;

securing a plurality of pins to said first mold plate so that said pins cross on top of said first tube;

coupling an air source to each of the tubes;

securing said mold plates to one another so that said first and second tubes contact said pins and such that said tubes contact one another at least in regions to either side of said pins;

heating said mold while pressurizing said tubes to form a racquet frame in which said tubes are bonded to one another at least in said regions adjacent said pins;

removing said frame from said mold plates; and

removing said pins from said frame, whereby said pins form string holes in said frame.

2. A method according to claim 1, wherein said mold cavity defines a racquet head portion, and wherein said tubes, when in said mold

alternately contact one another and a pin along the entire head portion of the mold cavity.

3. A method according to claim 2, wherein said tubes have ends forming a handle portion, and wherein, when said frame is molded, said ends are kept separated from one another.

4. A method according to claim 1, wherein the pins are secured to a plurality of pin plates.

5. A method according to claim 4, wherein said pin plates have an inner surface, from which said pins project, which forms part of the mold cavity.

6. A method according to claim 1, wherein said tubes are made of a composite material having a component which flows when heated such that, during molding, the tubes form an integral common wall.

7. A method according to claim 1, wherein said tubes are made of an uncured, fiber-reinforced resin.

8. A method according to claim 4, wherein at least some of the pin plates are positioned to the outer side of the head portion, wherein the pins of said at least some pin plates are joined to said pin plates by a rounded base, thereby to form string holes having rounded openings along the outside of the frame.

9. A method according to claim 8, wherein all of the pin plates forming string holes between said first and second tubes are positioned to the outside of said head portion.

10. A method according to claim 9, wherein said mold plates include a sunken ledge to the outside of said first and second tubes, wherein the pin plates forming string holes between said first and second tubes are secured in said sunken ledge.

5 11. A method according to claim 4, wherein the pins of each pin plate are parallel to one another.

12. A method according to claim 1, wherein said pins are hollow and made of a plastic material so as to form integrally molded grommet pegs for receiving racquet strings.

13. A method according to claim 1, wherein said pins have a first end adjacent to the outside of the frame and a second end adjacent to the inside of the frame, and wherein said pins have a shoulder at said first end in order to produce a radius at the inlet to the string holes.

14. A method according to claim 13, wherein said pins have a shoulder at their second end, such that both ends of the string holes are radiused, and wherein one of the two shoulders on each pin is removable.

15. A method according to claim 1, wherein each pin comprises first and second coaxial pin portions, wherein said portions are secured to a plurality of pin plates, wherein the pin plates associated with said first pin portions are positioned on the outside of the frame, and wherein the pin plates associated with said second pin portions are positioned on the inside of the frame.

16. A composite sports racquet frame formed according to the process of claim 1.

17. A composite sports racquet frame formed according to the process of claim 2.

18. A composite sports racquet frame formed according to the process of claim 3.

19. A composite sports racquet frame formed according to the process of claim 4.

20. A composite sports racquet frame formed according to the process of claim 5.

21. A composite sports racquet frame formed according to the process of claim 6.

22. A composite sports racquet frame formed according to the process of claim 7.

23. A composite sports racquet frame formed according to the process of claim 8.

24. A composite sports racquet frame formed according to the process of claim 9.

25. A composite sports racquet frame formed according to the process of claim 10.

26. A composite sports racquet frame formed according to the process of claim 11.

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27. A composite sports racquet frame formed according to the process of claim 12.

28. A composite sports racquet frame formed according to the process of claim 13.

5 29. A composite sports racquet frame formed according to the process of claim 14.

30. A composite sports racquet frame formed according to the process of claim 15.

31. A composite sports racquet having a frame with a head portion surrounding a stringing area, wherein at least the head portion of said frame is formed by an upper frame tube and a lower frame tube joined along mating surfaces to form a unitary frame member, wherein said head portion has an inner surface facing said stringing area and an outer surface facing away from said stringing area, and further comprising a plurality of hollow tubular grommet pegs extending between said inner and outer surfaces to form string holes, wherein said grommet pegs are interposed between said upper and lower frame tubes, and wherein each said grommet peg has opposite ends which are flared outwardly to secure said grommet peg in said frame.

20 32. A composite sports racquet according to claim 31, wherein said grommet pegs are made of metal.

33. A composite sports racquet according to claim 31, wherein said grommet pegs are made of plastic.

34. A composite sports racquet according to claim 31, wherein said frame is formed by providing upper and lower prepreg tubes, locating said grommet pegs between said prepreg tubes, and then molding and curing said tubes to form said frame.

5 35. A composite sports racquet according to claim 34, wherein said grommet pegs are made of metal.

36. A composite sports racquet according to claim 34, wherein said grommet pegs are made of plastic.

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